PITFALLS in Combat Simulations

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The use of combat simulations to conduct staff training exercises has been increasing as training budgets have been decreasing. The author looks at two of these battle simulation programs. He discusses what these simulations are not. He points out the training values of these systems are not the combat results, but the tactical reporting procedures, communication links and after–action reviews of each mission. Finally, he discusses the issues of gamesmanship and blaming the computer for poor performance as being detractors to the training value of these programs.

COMBAT simulations are valuable training resources whose importance will only grow in the future as training funds become constricted. Developing a thorough understanding of the capabilities and limitations of the various simulation systems will greatly improve the quality of simulation–driven exercises. I will confine the discussion here to staff training simulations, specifically two simulations within the Family of Simulation (FAMSIM): the Corps/Battle Simulation (CBS) and the Brigade/Battalion Simulation (BBS). Both of these simulations have similar operating characteristics and, interestingly, share common pitfalls.

Both CBS and BBS are microcomputer–based simulation systems that use distributed processing and high–speed graphics in a computer network that produces a real–time simulation of combat. The systems employ a matrix of weapons' effectiveness over many possible conditions for all weapon types modeled in the data base. The systems track ammunition, personnel, weapons, fuel, water and rations. Role players at computer work stations maneuver units, engage enemy units, perform combat support and combat service support functions and provide reports to their higher headquarters. A significant feature of both systems is that they employ a live, thinking opposing force.

The higher headquarters operates at a remote location in its standard command post (CP) configuration. Role players at the computer work stations feed reports to the CP via land line or FM radio. The commander and his staff in turn make decisions based on the reports and transmit orders back to the player cells. Both simulations can operate as a single–echelon trainer, or they can operate as multi–echelon trainers. A response cell for the headquarters above that being trained normally operates from the simulation center to provide continuity through the next higher headquarters.

The first thing we must understand about both CBS and BBS is that they are exercise *drivers*. They are not war games in which the desired end state is victory as determined by a favorable exchange ratio. Both simulations provide real–time, realistic combat results to stress the unit's command, control and communications (C^3). Units get wrapped up in the competition of fighting a war game and lose focus of the original training objectives.

Observations of several BBS–driven exercises at the Fort Riley, Kansas, Battle Simulation Center and several CBS–driven exercises at the Fort Hood, Texas, Battle Simulation Center revealed examples of common combat simulation pitfalls. Most people do not understand how combat simulations drive training exercises. What is the role of the simulation? We have found that through good pre–exercise training, players understand their role, but commanders often are the least likely to take the time to learn about what the simulation can provide. Unfortunately, commanders often short–change the train–up. Since the commanders set the tone for the training event, it is incumbent upon them to understand what the system can and cannot do. The commander's interest is readily obvious by the emphasis he or she places on train–up.

After–Action Reviews (AAR). The AAR is the single most important event of the simulation driven exercise. Too often, the AAR becomes an after–action critique where the facilitator dominates the discussion, which then revolves entirely around the tactical play that occurred in the computer work stations rather than how well the staff performed its duties.

Seldom have I seen an exercise where the commander asks for an intermediate halt in the game play to go over a critical lesson with his staff. Both CBS and BBS provide the capability to stop, evaluate what went right or wrong and restart either at the stopping point or at some earlier point. Usually, the conclusion of a specific tactical mission is the stopping point. Commanders lose valuable lessons with this technique. A new staff would especially benefit from the process of stopping periodically to evaluate what has happened. In one BBS exercise, during the AAR, I observed at Fort Riley, the battalion staff had virtually no input during the AAR. Such an AAR leads me to question whether the battalion staff derived any training at all from the exercise. This leads to the next observation.

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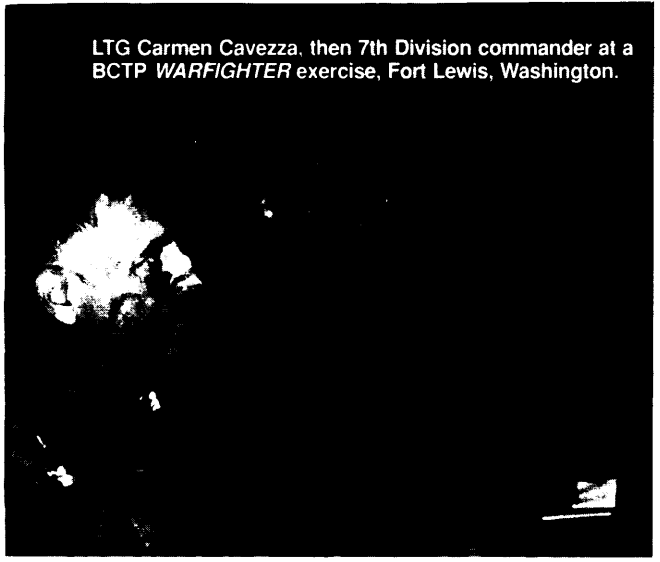
Training Audience. I have seen a pronounced focus on the tactical actions that occur within the work stations during exercises. In many instances, the systems are being used as tactical trainers. The system design for both CBS and BBS does not replicate the level of detail that would make the simulations useful for this purpose. Battalion and brigade staffs are the target BBS training audiences. Corps and division staffs are the target CBS training audiences. The simulations provide real–time, realistic combat results to which the appropriate staff must react, using normal staff procedures.

These systems are not maneuver trainers, but some units try to use them for this purpose. The nuances of maneuvering a tank platoon across terrain are best practiced in a field environment,



LTG Carmen Cavezza, then 7th Division commander at a BCTP *WARFIGHTER* exercise, Fort Lewis, Washington.

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where an error of less than a meter can mean the difference between throwing track and successfully completing the mission. The finest resolution either of these systems provides is 100 meters. This is fine, given the systems' intended function.

Both systems can assist training communications and reporting skills. In fact, the players operating from the computer work stations can derive a great deal of training benefit by focusing on how they report the battle to the higher headquarters. The main training audience remains the headquarters staff located outside the simulation center in its CP. The real action, so to speak, takes place from the time the role player keys his microphone to the point the commander and his staff transmit orders back to the role player. The game is unimportant except for the interactions it causes between both ends of the communications link and within the CP.

Do not use either system to test the capabilities and limitations of weapons or units. Although the system produces realistic combat results, there are hundreds, if not thousands of variables not modeled, that could affect the real–world performance of a given unit or weapon. In some cases, the weapon systems' capabilities derive from peacetime tests and may not accurately portray the true capability. Some weapons are more capable than modeled; others are less capable. Some variables are subjective and may or may not reflect reality as each commander knows it. Some of the synergistic effects of combat multipliers are absent because they are not yet modeled. While both CBS and BBS are relatively accurate in replicating technical capabilities of the systems within the data base, we must remember that it is the people who operate those systems that determine their effectiveness against a given opponent. For example, a T–72 tank is very effective against an M1A1 in BBS, but our real–world experience in Southwest Asia demonstrated how ineffective a T–72 can be in poorly trained and poorly motivated hands versus an M1A1 in well–trained, highly motivated hands.

Training Objectives. Commanders often do not clearly define their training objectives before an exercise. "Conduct a deliberate attack" is not an appropriate training objective; it is a tactical mission that will force the staff to accomplish specific tasks. Those staff tasks are what ultimately become the training objective. Examples of good training objectives are:

- Train tactical reporting procedures.
- Train battle–tracking in the tactical command post/tactical operations center.
- Train logistic reporting and planning.

These are only a few of the possibilities, and they are all C^3 tasks. CBS and BBS are staff training devices. If a well–trained simulation center staff understands the objectives, it can facilitate accomplishing those objectives and keep the exercise focused. Otherwise, unnecessary wheel–spinning becomes the order of the day, resulting in frustration for the unit and poor training. Too often, the hidden agenda behind these exercises is to test tactical theories and plans for the National Training Center, Fort Irwin, California, or the unit's contingency plan. CBS and BBS are not good devices for this purpose, and commanders should be careful not to use them this way.

Many times, commanders simply do not see how important it is to define objectives before the exercise. Clearly defined objectives allow the systems manager to better advise the commander on structuring his exercise. Time spent defining objectives is time well spent and time saved later.

Level of Play. Commanders repeatedly attempt to force the level of computer play down to squad and sometimes individual vehicle for both CBS and BBS. Normally, the appropriate level of replication on the system is two levels below the headquarters being trained. There are some exceptions that are acceptable, for example, scouts and specialized elements such as ground surveillance radar, but keep these to a minimum. There are two major reasons for this. First, too many units on a work station overload the keyboard operator. More often than not, the operator forgets he even owns assets because he is keeping track of too many. In other words, his span of control is too great.

Second, the more units that are in play, the slower the system becomes. This is because the system continuously makes line-of-sight checks, moves units and conducts combat for every individual unit represented. This involves an enormous number of calculations. Every computer has its limitations. In its most simple explanation, a computer adds and subtracts. That is all it is capable of, but its speed makes it look like it is doing much more. At some point, it cannot keep up with demands. As operators, we can reduce this potential problem by aggregating units wherever possible. If an individual unit does little toward affecting reporting and staff-actions, roll it into one that has an impact. The systems manager should be able to assist the commander in structuring the data base in the most efficient manner.

Damage Assessments. There is a gross misuse of battle damage assessment (BDA) in these staff trainer simulations. BDA is a seldom-stated, but often prime, objective in exercises. How many "kills" and "losses" a unit achieves in a simulation are irrelevant if the staff learns valuable lessons about its internal operations.

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Commanders often foster this by berating role players for killing too few of the enemy or for losing units to enemy fire. This is silly and wrong. Kills are irrelevant because units in these simulations, like most other simulations, never tire, never lose morale, never get lost or confused and continue to fight to the last man and last bullet. The only value of BDA, as provided by the system, is to compare reports received by the higher headquarters with what the computer reported to the player cells. Compare the reports and discard the computer-generated BDA. The highlight of BDA in this context is the staff and commander perceiving, through the reports sent from the work stations, a different situation than what actually occurred. In this regard, both CBS and BBS faithfully duplicate a problem that has plagued commanders since the beginning of warfare—inaccurate reporting.

Nondoctrinal Actions. By this, I do not mean those actions that may violate doctrine, but which, under the circumstances, make sense. Rather, I refer to the gamesmanship that work station players, and even the CP, attempt in order to produce a favorable tactical outcome on the computer—actions that the unit would not do in a live, tactical environment.

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For example, combining headquarters tank sections to make tank platoons, leaving tank companies, and sometimes even battalions, without a headquarters is a frequent BBS gamesmanship technique. An argument posed by some players is that they are collocating the headquarters sections for coordination. In fact, the players then maneuver the new configuration exactly like a platoon, even to the extreme of moving it beyond any reasonable distance from the original units. Collocating headquarters is not synonymous with combining the assets to create new maneuver units. Another example frequently seen is the use of "expendable" units such as Stinger sections and supply assets to draw fire and spot enemy units.

Staff and Commanders in the Player Cells. Commanders and principal battle staff members frequently visit computer work stations and spend too much time there. An argument used by some is that they are simulating being in their command vehicle behind the lead unit. While it is realistic to expect commanders and staff officers to meet with lower echelons in the field, this is not well represented by the presence of the commander or staff officers in the computer work station. The view within the work station is too perfect to properly simulate a commander or S3 (operations and training officers) being up front with the lead unit. This perfect intelligence then skews the actions the commander and his staff take in response to a given situation.

If a commander or the S3 must meet with the work station officer in charge (OIC), he or she should do it away from the work station. The OIC should be able to explain the current situation as he or she sees it, using a map. Neither CBS nor BBS can simulate carnage, confusion or noise, and their impact on the unit's ability to perform its mission. These are the environmental factors that the higher commander normally assesses in person during a real battle. Looking at the computer screen does nothing to simulate these factors and is a poor substitute.

The real reason commanders get involved in the work station is to get inside the OPFOR (opposing forces) commander's decision cycle. Let us be honest about the hidden agenda. Running the show from a computer is not the correct way to address this process.

Blaming the Computer. All system problems and quirks should be transparent to the training audience. A common problem is for the player cells to experience difficulties or even tactical reversals and announce over the radio net that the "computer is screwing up." The battle staffs in the CPs then sit back and wait for the technicians to fix the computer, rather than perform appropriate staff actions for the current tactical situation. Computers sometimes "burp," and technical problems do arise. However that is no excuse for stopping meaningful training. A well-trained simulation center staff should be able to create "work-arounds" for most technical problems, which will appear realistic to the staff in the CP. This ensures smooth exercise flow, but requires cooperation on the part of all parties within the simulation center, including the OPFOR commander, the work station OICs and the simulation center

staff. This brings me to a final key point, which is no less important for being discussed last.

Simulation Center Staffing. There are several possible staffing alternatives for battle simulation centers. In fact, the staffing of these centers is a worthy topic of study by itself. I will not discuss these alternatives in great detail here, but I will comment on the alternative that seems to be the Army's preferred method of staffing. A design goal of both systems was reducing the military manpower overhead required to run an exercise. Manpower overhead, significant manpower overhead for continuous operations, is an unavoidable cost of doing business.

In the effort to reduce the burden on military manpower, contractor–run systems are becoming the norm. This option offers continuity of technical expertise, provided the same contractor can retain the contract year after year. There is also concern over contractor responsiveness. If there is a level of friction and distrust between Department of the Army civilians and military personnel, the interaction of contractors and military personnel often produces amplified friction and distrust. I have seen a marked distrust by the using units' chain of command for simulation center chiefs who are not branch–qualified maneuver arms. The absolute worst staffing solution is to assign personnel with pending chapters or other administrative actions, or marginal performers as staff within a battle simulation center.

The personnel who staff the simulation center, whether civilian contractor, government service civilians or military, must be technically competent, highly motivated and aggressively proactive to make the system operate to its fullest potential. A knowledge of current weapon systems, tactics and enemy doctrine, combined with a thorough knowledge of what the simulation system can replicate, is necessary for at least one member of the staff. Too often, there is a disconnect between the commander and the technicians, resulting in the loss of valuable training opportunities. Hopefully, as the value and importance of combat simulations grow, there will be personnel authorizations developed that better support the systems.

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Computer–driven battle simulations are valuable tools that cut the cost of training staffs. Their importance will increase in the near future as budget cuts take a deeper bite out of training funds. It is vital that commanders at every level develop a better understanding of the systems that are currently fielded for training staffs. This better understanding will help commanders avoid the common pitfalls in combat simulations and help ensure that their staffs receive the best possible training. ***MR***

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